NASA TECHNICAL TRANSLATION NASA TT F-15,844

STUDY OF ANTINUCLEAR ANTIBODIES IN SUBJECTS WITH PHOTODERMATITIS

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Translation of "Riscontro di anticorpi antinucleo in soggetti con fotodermatite," Gironale Italiano di Dermatologia, Vol. 109, No. 2, 1974, pp. 124-125

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D.C. 20546 AUGUST 1974

STANDARD TITLE PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
NASA TT F-15,844		

4. Title and Subtitle	5. Report Date
STUDY OF ANTINUCLEAR ANTIBODIES IN SUBJECTS WITH PHOTODERMATITIS	August 1974
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
F. Ippolito and P.G. Natali, Rome	
	10. Work Unit No.

9. Performing Organization Name and Address	11. Contract or Grant No.
Leo Kanner Associates, P.O. Box 5187, Redwood City, California 94063	NASw-2481
	13. Type of Report and Period Covered
	Translation
12. Sponsoring Agency Name and Address	14. Sponsoring Agency Code
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, WASHINGTON, D.C. 20546	

15. Supplementary Notes

Translation of "Riscontro di anticorpi antinucleo in soggetti con fotodermatite," Giornale Italiano di Dermatologia, Vol. 109, No. 2, 1974, pp. 124-125.

16. Abstract

Recent studies have shown that it is possible to elicit in experimental animals an antibody response to molecules of nucleic acids irradiated with ultraviolet light. The antibodies obtained show an elective specificity for the photoproducts of the thymic base of deoxyribonucleic acid. The use of these antibodies in indirect immunofluorescence methods has been a valuable aid in studyin the effects of ultraviolet irradiation on animals exposed in vivo to such radiant energies. It was ascertained that the nuclear content of the cutaneous cells of animals exposed to ultraviolet light undergoes a temporary denaturation, which can be revealed with the use of antisera specific for UV-DNA.

17. Key Words (Selected by Author(s))	18. Distribution Statement
	Unclassified - Unlimited

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	35	

NASA-HQ

STUDY OF ANTINUCLEAR ANTIBODIES IN SUBJECTS WITH PHOTODERMATITIS

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Recent studies have shown that it is possible to elicit in experimental animals an antibody response to molecules of nucleic acids irradiated with ultraviolet light (UV-DNA) [1-5]. The antibodies obtained showed an elective specificity for the photoproducts of the thymic base of deoxyribonucleic acid [6]. The use of these antibodies in indirect immunofluorescence methods has been a valuable aid in studying the effects of ultraviolet irradiation on animals exposed in vivo to such radiant energies. It was possible to ascertain that the nuclear content of the cutaneous cells of animals exposed to ultraviolet light undergoes a temporary denaturation, which can be revealed with the use of antisera specific for UV-DNA [4]. /124*

It has also been determined what effect ultraviolet radiations of wavelengths present on the Earth's crust can have on the cellular DNA, and it was possible to observe, in mice irradiated with wavelengths of 254, 295, 300 and 310 nm, for a total radiant energy equal to ten minimum erythema doses, that denaturation of the DNA is provoked by the 300 nm wavelength [6]. The same results are also reproducible with higher wavelengths, using a larger minimum erythema dose. However, it seemed of interest to find out whether, in dermatites that involve a pathogenic photoreactive component, it would be possible to demonstrate evidence of antinuclear antibodies in the serum and at the level of the cutaneous lesions. The case histories relating to our research are as yet limited to four patients, three women and one man, aged between 35 and 70 years. Of the three women, two exhibited eczematous photodermatites, with sensitization to sulfonamide, and the third, an erythematous-

*Numbers in the margin indicate pagination in the foreign text.

edematous morphological picture from neomycin. In the man, who was 70 years old, the cutaneous lesions had recurred /125 chronically for about 2 years, with attacks of greater severity in the spring-summer seasons, exhibiting even on the isostructural plane that picture which has today come to be defined as actinic reticulosis.

Experimental Part

The investigation was carried out using the methods of direct and indirect immunofluorescence.

Indirect Immunofluorescence

Four-micrometer kidney sections of mice were prepared by a cryostat, and after freezing, were first exposed for 40" from a distance of 20 cm to ultraviolet rays from a Hanau lamp with a polychromatic beam, and were next fixed in acetone for 10' at ambient temperature. Immediately afterward, sera from the patients were placed on slides, at a graduated dilution of up to 1:64, and the prepared slides were incubated for 30' in the dark at ambient temperature. After washing with phosphate buffer solution two times, each time for 5', agitation, an antiserum of commercial human antigamma-globulin, marked with fluorescin, diluted 1:10, was put on them. The slides were then incubated again for 30' and washed again with a phosphate buffer solution two times, each time for 5'. Finally, the sections were enclosed in glycerine-buffered slides, and observation was begun.

Direct Immunofluorescence

Cryostated sections of cutaneous biopsy fragments from the patients were prepared and fixed as for indirect fluorescence, were incubated for 30' after being subjected to human antigamma-globulin antiserum marked with fluorescin, in parallel with anti-UV-DNA antiserum from rabbits, treated with fluorescin.

The rabbit UV-DNA antiserum was prepared according to the technique described by E.M. Tan and R.B. Soughton [3].

Results

In the man affected by actinic reticulosis, the indirect immunofluorescence test was shown to be positive to a dilution of 1:4, while it was negative in the other three cases.

In all cases, the direct immunofluorescence test was negative.

Given the restriction of our case histories, the results of our studies cannot have valid conclusions; at any rate, the positive indirect immunofluorescence test observed in the case of actinic reticulosis seems just as interesting in the etiopathogenic evaluation of the dermatoses, even if it is quite probable that the finding represents only a pure and simple epiphenomenon, and it seems to us to be suitable to broaden the scope of the study that we have undertaken.

The bibliography is reported in the abstracts.